



# Working Group Meeting #4

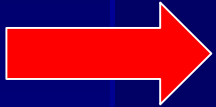
May 17, 2007

# Meeting Agenda

- Introduction (Chris)
- Discuss Screening Criteria (Kerrie)
  - Consensus
- Low Cost Short Term Improvements (Bill)
- Preliminary Studies (Bill/Trent)
- Brainstorm Alternative Concepts (Kerrie)
- Assignments (Kerrie/Chris)

# Project Development Process for Pelham

- Preliminary Design (2006-2007)
  - Placemaking
  - Problem/Vision/Goals
  - Alternatives
  - Public Hearing
- Final Design (2008-2009)
  - Detailed Design
  - Purchase Right of Way
  - Secure Permits
- Begin Construction (2010)



# Context Sensitive Solutions

"A collaborative interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility."

# Consensus

“Consensus does not mean that everyone agrees, but that the principal groups and individuals can live with a proposal.”

# CSS Steps

Public  
Hearing

Preferred  
Alternative

Screen  
Alternatives

Brainstorm  
Alternatives

Screening  
Criteria

Vision  
Statement

Problem  
Statement

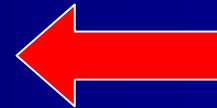
**We are here**

Consensus Reached 2/15/06

Consensus Reached 12/21/06

Placemaking  
Workshop

October 16, 2006



# Public Participation

## ■ Public Involvement Plan

- Introduction
- Project Background
- Project Team
- Project Process
- Working Group
- Communication



## ■ Project Website

- [www.nh.gov/dot/projects/pelham14491/index.htm](http://www.nh.gov/dot/projects/pelham14491/index.htm)

# **Alternative Screening Criteria**



# Problem Statement



*Consensus  
Reached*

The Pelham Town Center is divided by multiple intersections containing high volumes and speeds of local and regional commuter traffic, creating congestion that negatively affects safety resulting in unacceptable delays. This detracts from the historic character and setting of the Town Center. No “sense of place” exists that promotes community pride or encourages activities that attract pedestrians and groups of people to gather. This area lacks alternative routes, gateway, and traffic calming features that introduce and highlight the historic character of the town center. The area is marked by inadequate pedestrian/ bicycle connectivity and amenities, and a complete lack of on-street parking, descriptive signage, and lighting.

# Vision Statement



*Consensus  
Reached*

The Pelham town center will be enhanced by changes to multiple intersections, which will make the town center safer and more welcoming to drivers, pedestrians, and bicyclists. These changes will enhance and preserve the small town character, historic setting and community aesthetics. Traffic movement for all approaches through the Pelham Town center will flow at a slow, steady, safe, and efficient manner for pedestrians, bicycles and vehicles.

Gateway treatments will provide an announcement to drivers that they are entering the Pelham Town center. The Town center will become a focal point that has connectivity and amenities, which contribute to a sense of “place”, history, and pride.

# Alternative Screening Criteria

Scoring Criteria				
(VP) – Very Poor	(P) - Poor	(N) - Neutral	(G) - Good	(VG) – Very Good
Fatal Flaw Impact	Negative Impact	Neutral	Benefit	Substantial Benefit
Serious Degradation	Degradation	Not Applicable	Improvement	Substantial Improvement
Unreasonable	Opposition	No Impact	Enhancement	Reasonable
Strong Opposition			Support	Strong Support

# Alternative Screening Criteria

Category	Score				
	VP	P	N	G	VG
Access					
Aesthetics					
Community Resources					
Economic Vitality					
Historic and Archeological Resources					
Implementation					
Mobility					
Natural Environment					
Public Health					
Quality of Life					
Residential Neighborhoods					
Safety					
Support					
Transportation Choice					

The concept satisfies all element of the Project Vision Statement	Unreasonable	Reasonable
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# **Low Cost Short Term Improvements**

# Low Cost Short Term Improvements

- Signing
- Landscaping
- Traffic Operations
- Pedestrian Operations
- Aesthetics
- Community Issues

# Preliminary Studies

# Preliminary Studies

- Signal and Roundabout Info
- Signal Concepts
- Roundabout Concept
- Suggested Alternatives



# Overview of Traffic Signals

1. Role of Traffic Signals
2. Components of Traffic Signals
3. Signal Timing Plan Glossary
4. Signal Timing Plan Basics
5. Traffic Signal Controller Types
6. MUTCD Warrants



# Role of Traffic Signals

Signals indicate when traffic (be it vehicles, bicyclists, pedestrians) should stop, yield, or proceed

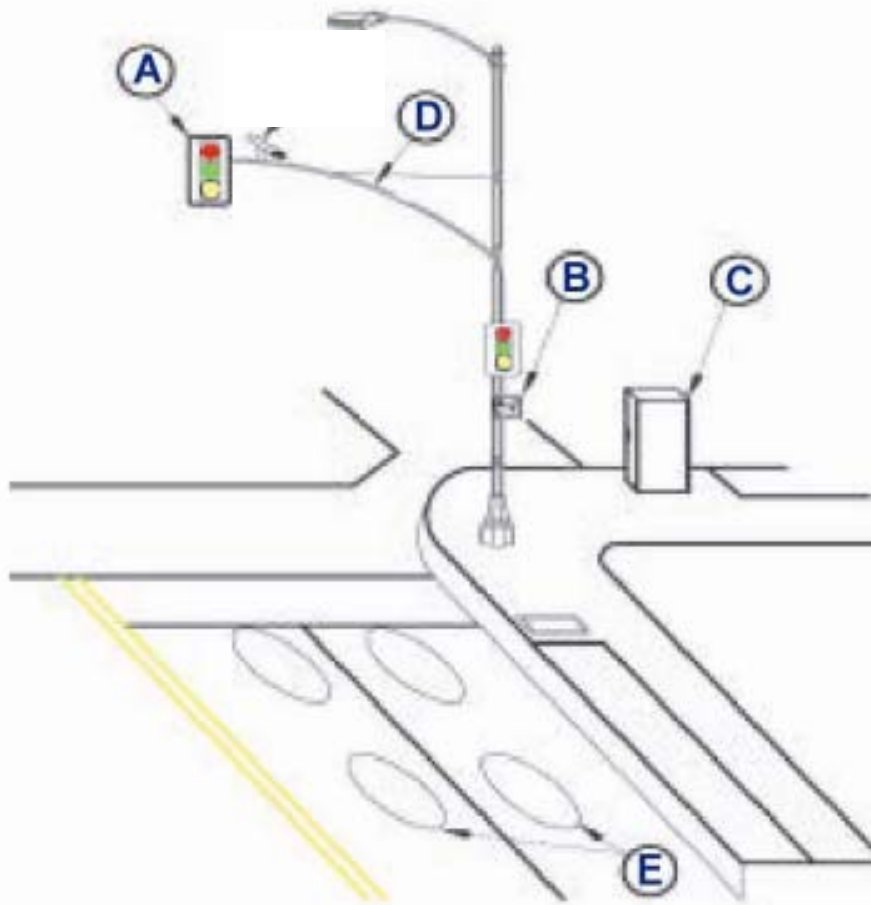


# Role of Traffic Signals

When properly timed signals can:

- Provide for an orderly movement of traffic
- Increase the capacity of an intersection
- Reduce frequency and severity of collisions
- Interrupt heavy traffic flows to allow other traffic from side roads to cross or enter

# Components of Traffic Signals



- A. Signal Head
- B. Pedestrian Signal
- C. Signal Cabinet
- D. Mast Arm
- E. Detector Loops

# Controller Cabinet





# Signal Timing Plan Glossary

- Green Time – Amount of time signal is green per phase
- Protected/Permitted Phase – Arrow or Ball
- Clearance Time – Yellow and All Red time
- Leading Left Turn – Left turn phase precedes the through movement
- Actuation – Detectors adjust length of green time
- Vehicle Extension – length of green time is extended if vehicle detected
- Preemption – emergency vehicle override of signal
- Coordination – coordination of adjacent signalized intersections



# Signal Timing Basics

## General Rules:

- Limit the number of phases. More phases = greater lost time
- Shorter cycle lengths yield best performance. However cycle length needs to clear vehicles.
- Longer cycle lengths are generally used in peak hour to allow more green time for mainline traffic.



# Pre-Timed Signals

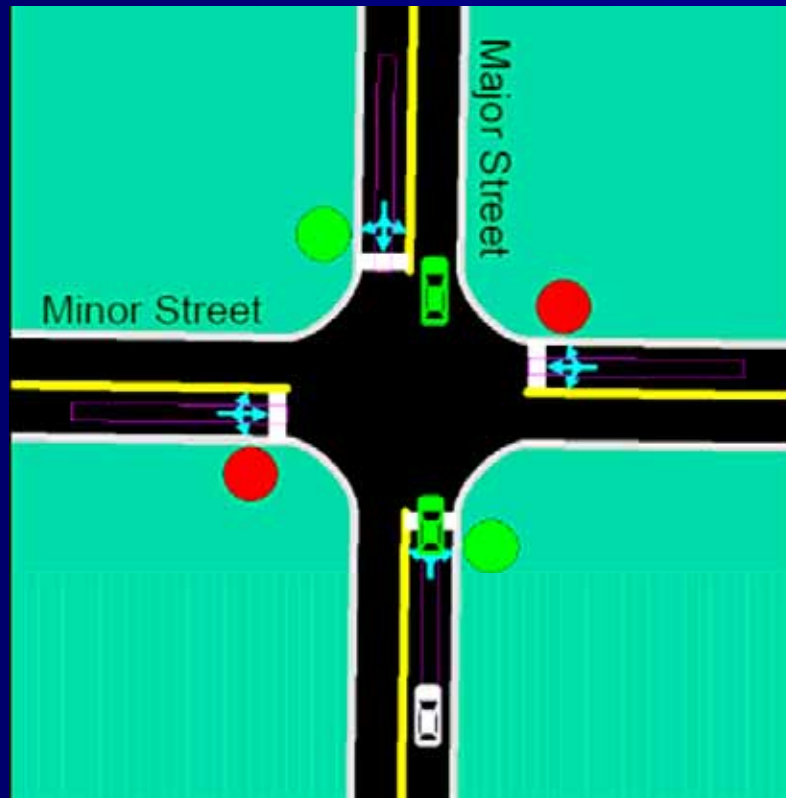
- Signal phases follows a preset order.
- Each phase lasts a specific duration.





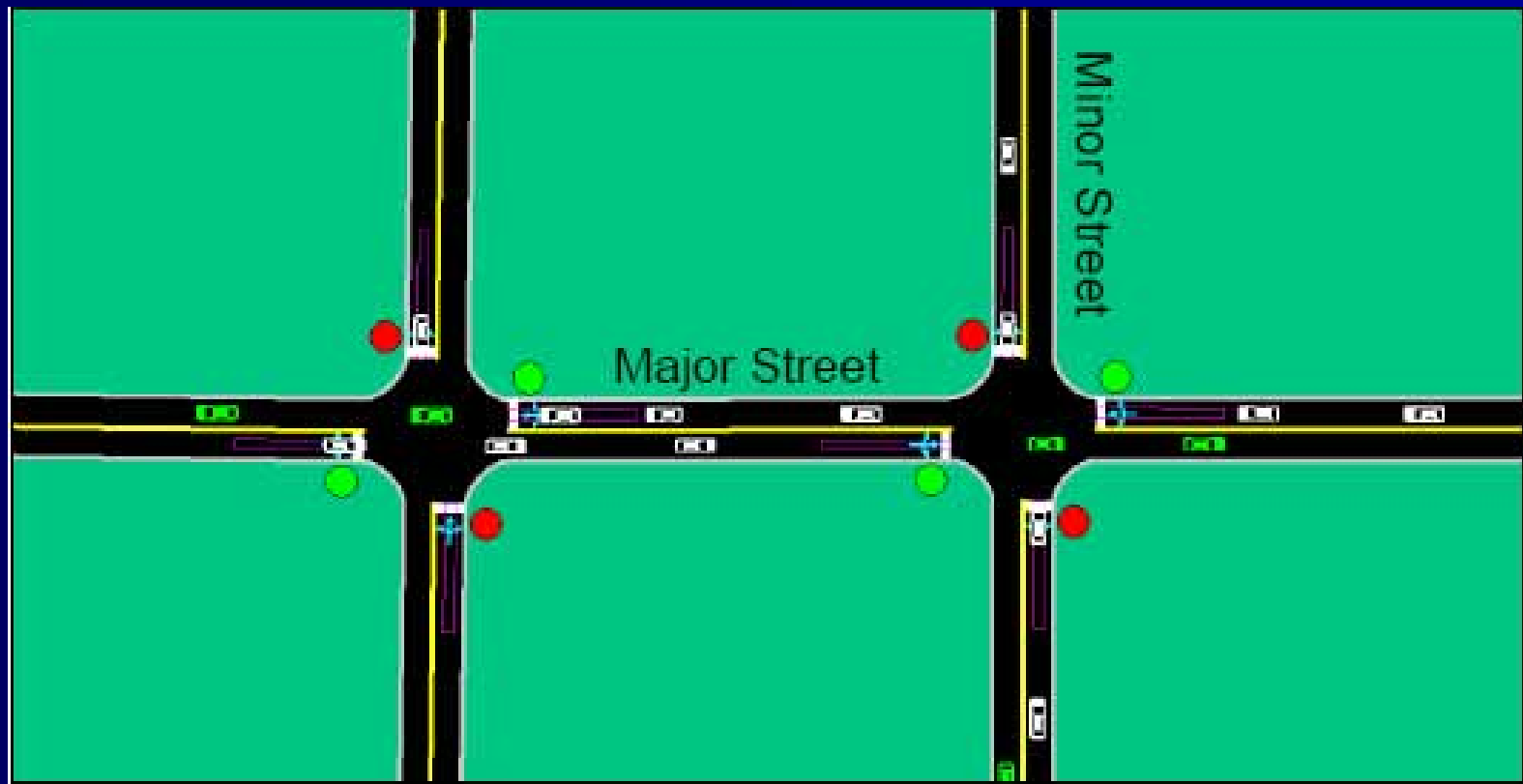
# Semi-Actuated Signal

- Good for high mainline volumes and variable side street volumes
- Side streets can gap out if there is no vehicle demand



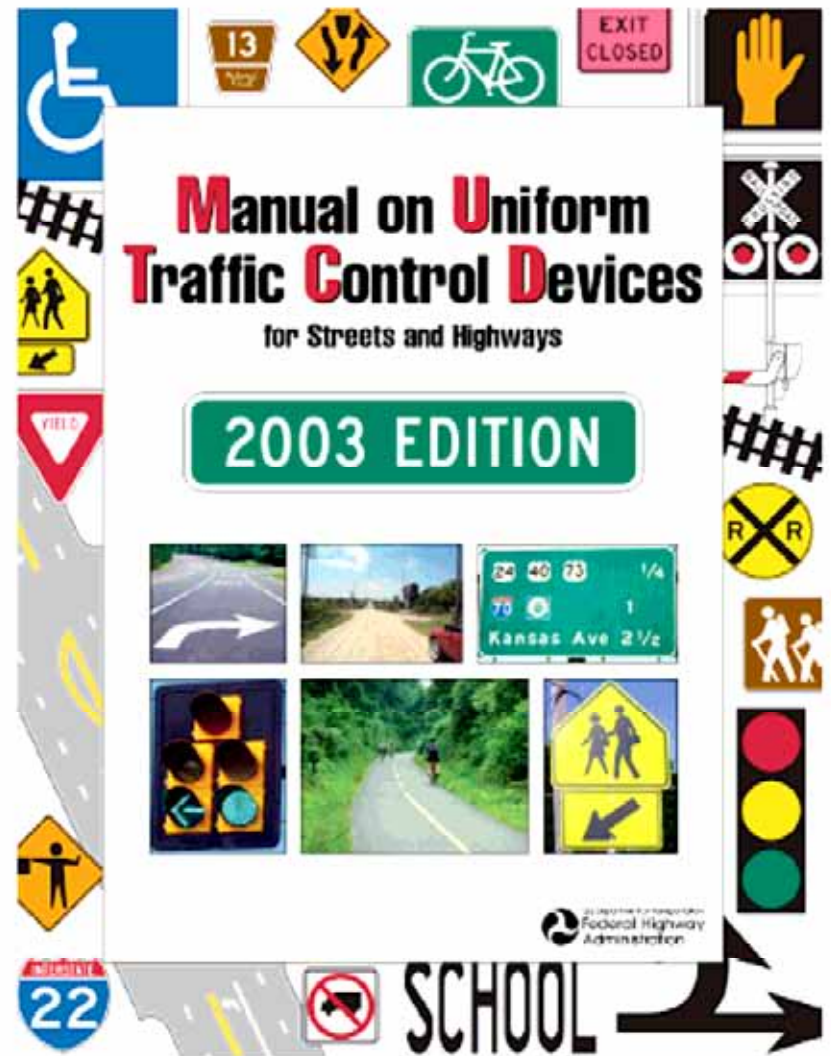
# Fully – Actuated Signals

- Phase length determined by vehicle demand on all approaches.
- Can be coordinated or uncoordinated.

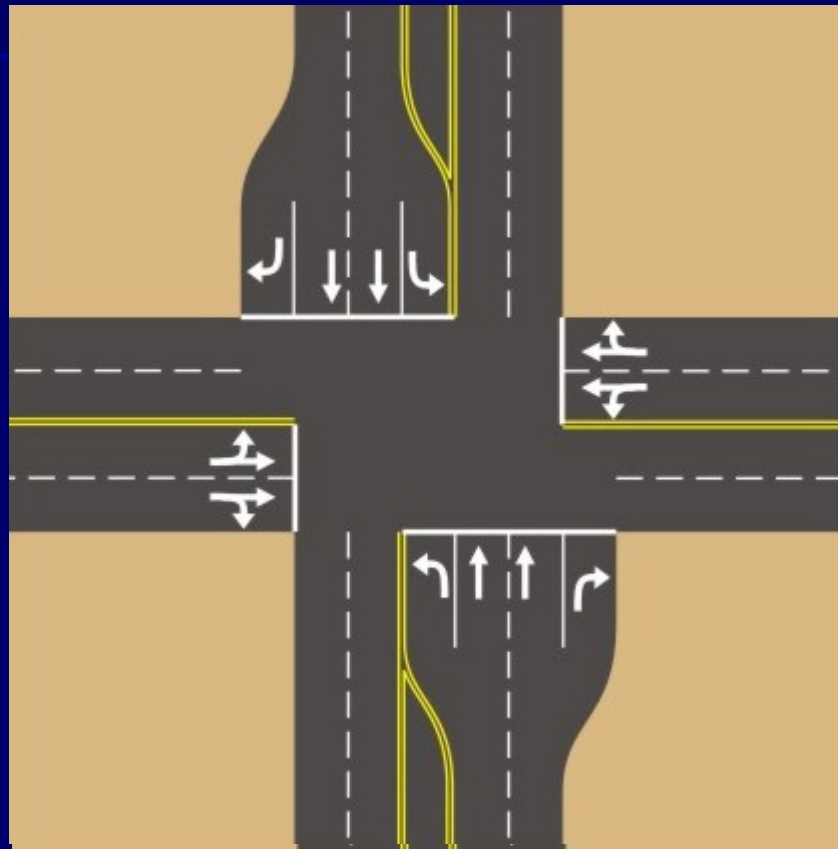


# When is a signal Warranted?

1. Warrant 1, Eight-Hour Vehicular Volume: vehicle volume thresholds for 8 hours on an average day
2. Warrant 2, Four-Hour Vehicular Volume: vehicle volume thresholds for 4 hours on an average day
3. Warrant 3, Peak Hour: vehicle volume threshold for one hour on an average day (unusual cases only, e.g. manufacturing plants)
4. Warrant 4, Pedestrian Volume: pedestrian volume threshold
5. Warrant 5, School Crossing: school children crossing the major street
6. Warrant 6, Coordinated Signal System: when an additional signal is needed
7. Warrant 7, Crash Experience: severity and frequency of crashes warrants a signal
8. Warrant 8, Roadway Network:



# Signalized Intersections



# Roundabouts

- What is a Roundabout
- How to Drive a Roundabout
- Advantages of Roundabouts
- Examples

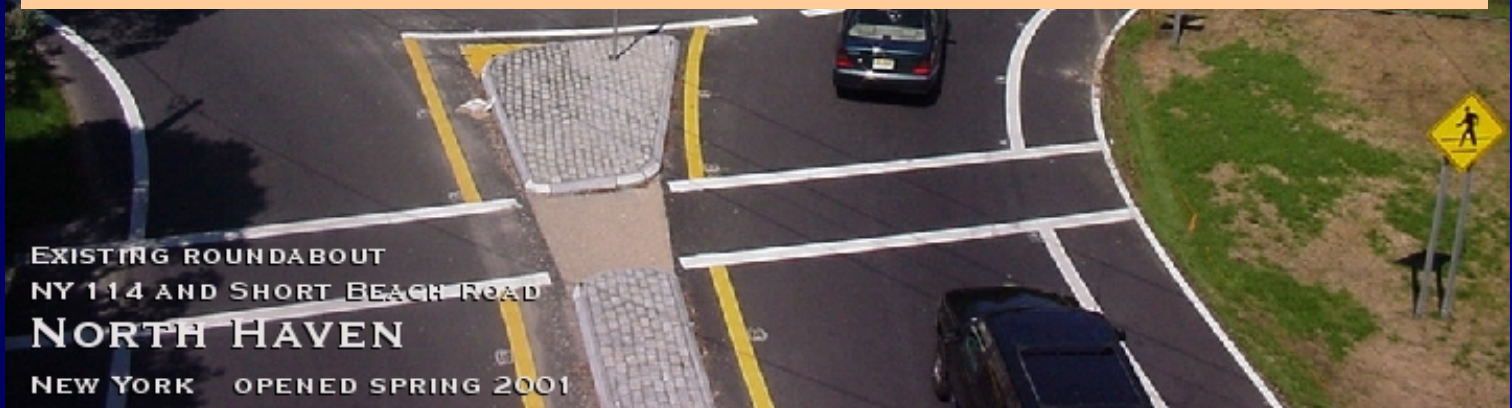


# What is a Roundabout ?

- Circular One-Way Intersection



**It Is NOT a Traffic Circle or Rotary !!!**



EXISTING ROUNDABOUT  
NY 114 AND SHORT BEACH ROAD  
**NORTH HAVEN**  
NEW YORK OPENED SPRING 2001

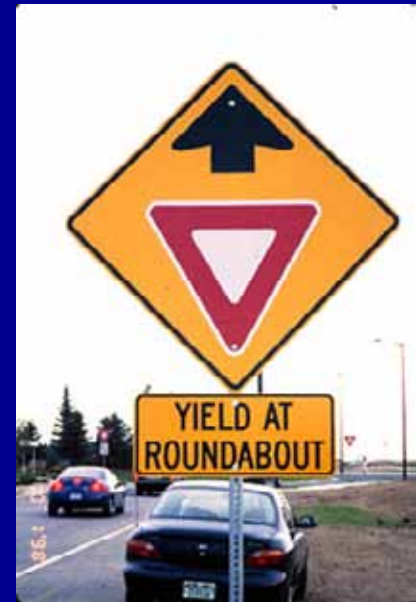


# They are NOT Traffic Circles



# How to Drive a Roundabout

- Yield to Vehicles in the Roundabout
- Choose a Gap
- Enter the Roundabout
- Yield to Pedestrians When Entering and Exiting

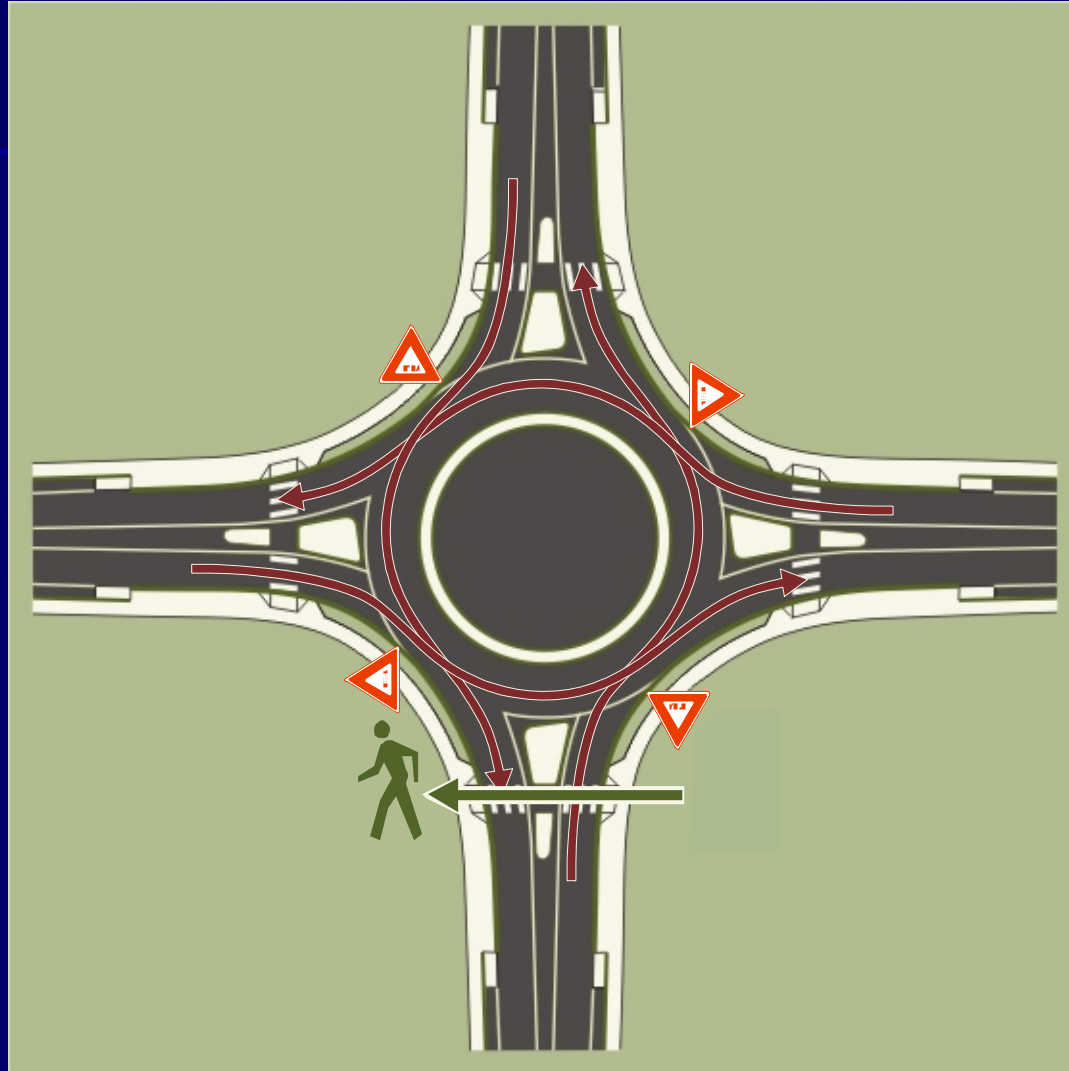




# A Roundabout Operates



# The Modern Roundabout



# Components of a Roundabout



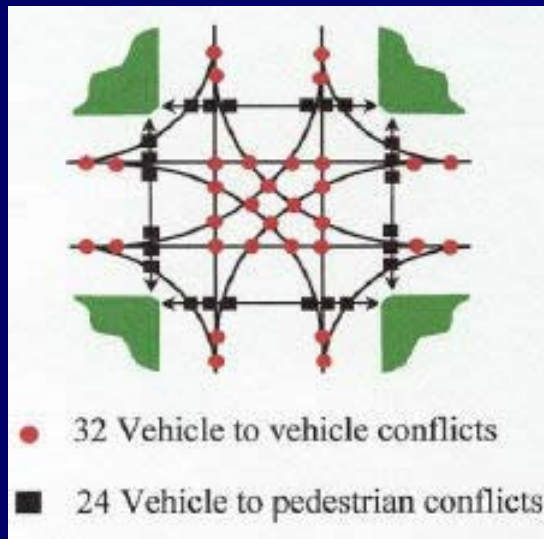
# Advantages of Roundabouts

- Slow Speeds
- Saves Lives
- Improved Capacity of Intersection
- Reduced Pollution and Fuel Use
- Saves Money
- Aesthetic Treatments
- U-Turns Allowed and Convenient





# Crash Reduction

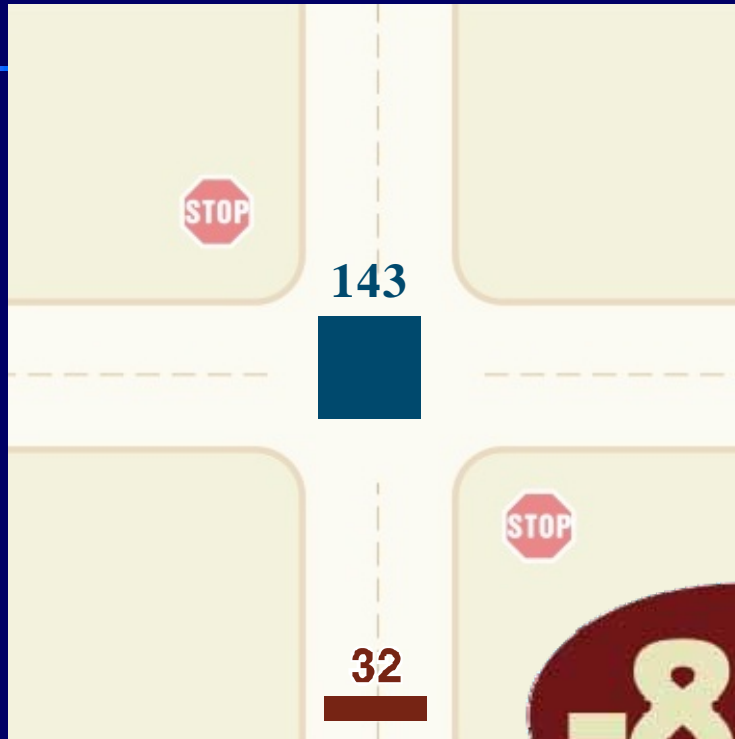


4-Way Intersection

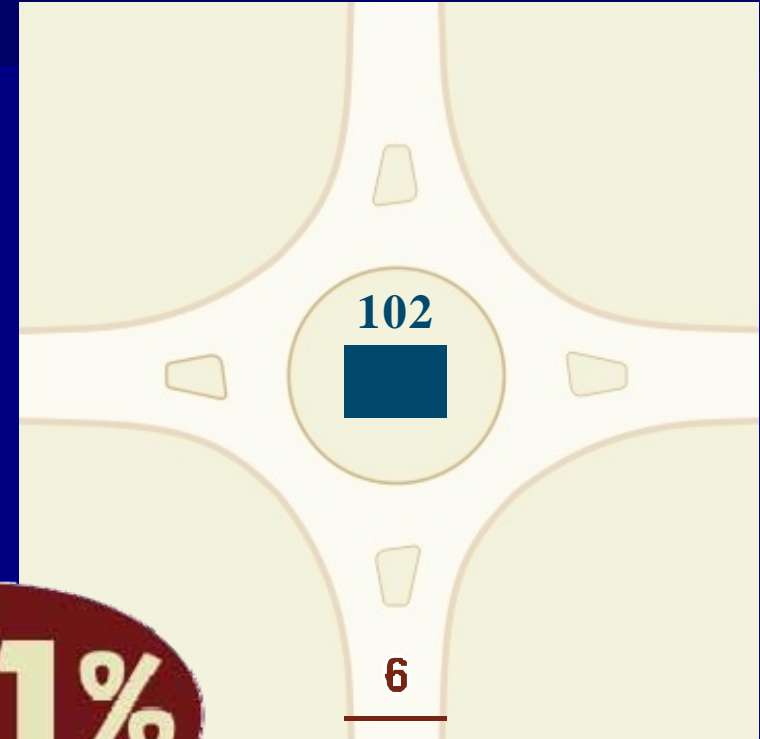


Roundabout

## 2 Way Stop Intersection



## Roundabout



**-81%**

How do typical types of crashes compare between conventional intersections and roundabouts?

# Roundabouts in NH

- Nashua – NH 130 Broad Street 16,000 ADT
- Nashua – Main Street 12,000 ADT
- Keene – Court Street 10,000 ADT
- Hanover (2)– NH 10 8,000 ADT
- Plymouth – US 3/NH 175A (Const.) 12,000 ADT
- Meredith – US 3/ NH 106 (Const.) 14,000 ADT
- Keene – NH 101 (Const.) 50,000 ADT
- Rye – Foyes Corner (Const.) 20,000 ADT
- Pembroke – US 3 (Design) 17,000 ADT
- Pelham – Town Center 21,000 ADT





**Nashua - Main Street**





**Nashua – Main Street**



# Nashua – Main Street







**Nashua – Broad Street**









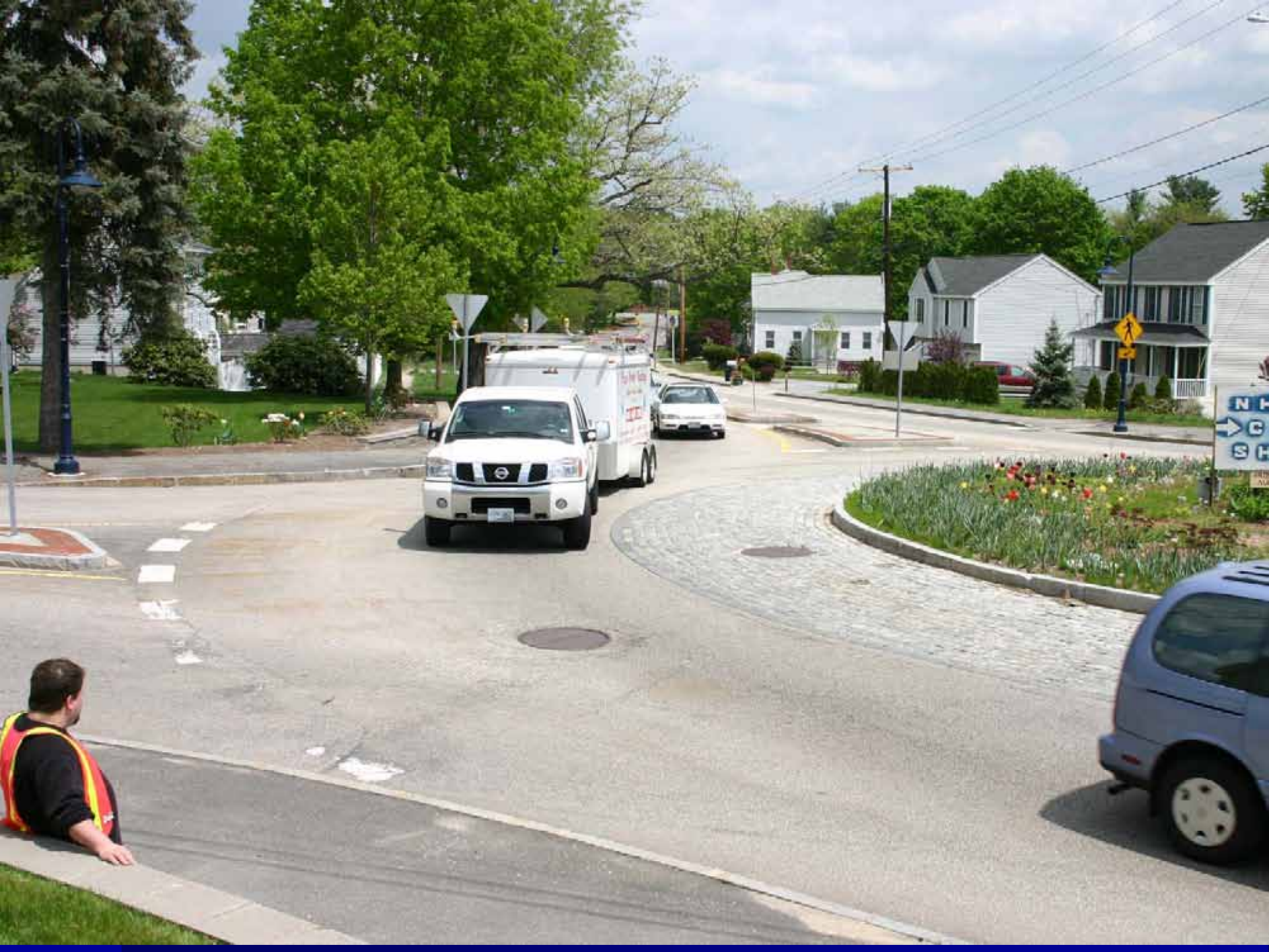
























Keene, NH

COURT ST - KEENE, NH

Vanasse Hangen Brustlin, Inc.  
Bedford, NH 03110







Boca Raton, FL



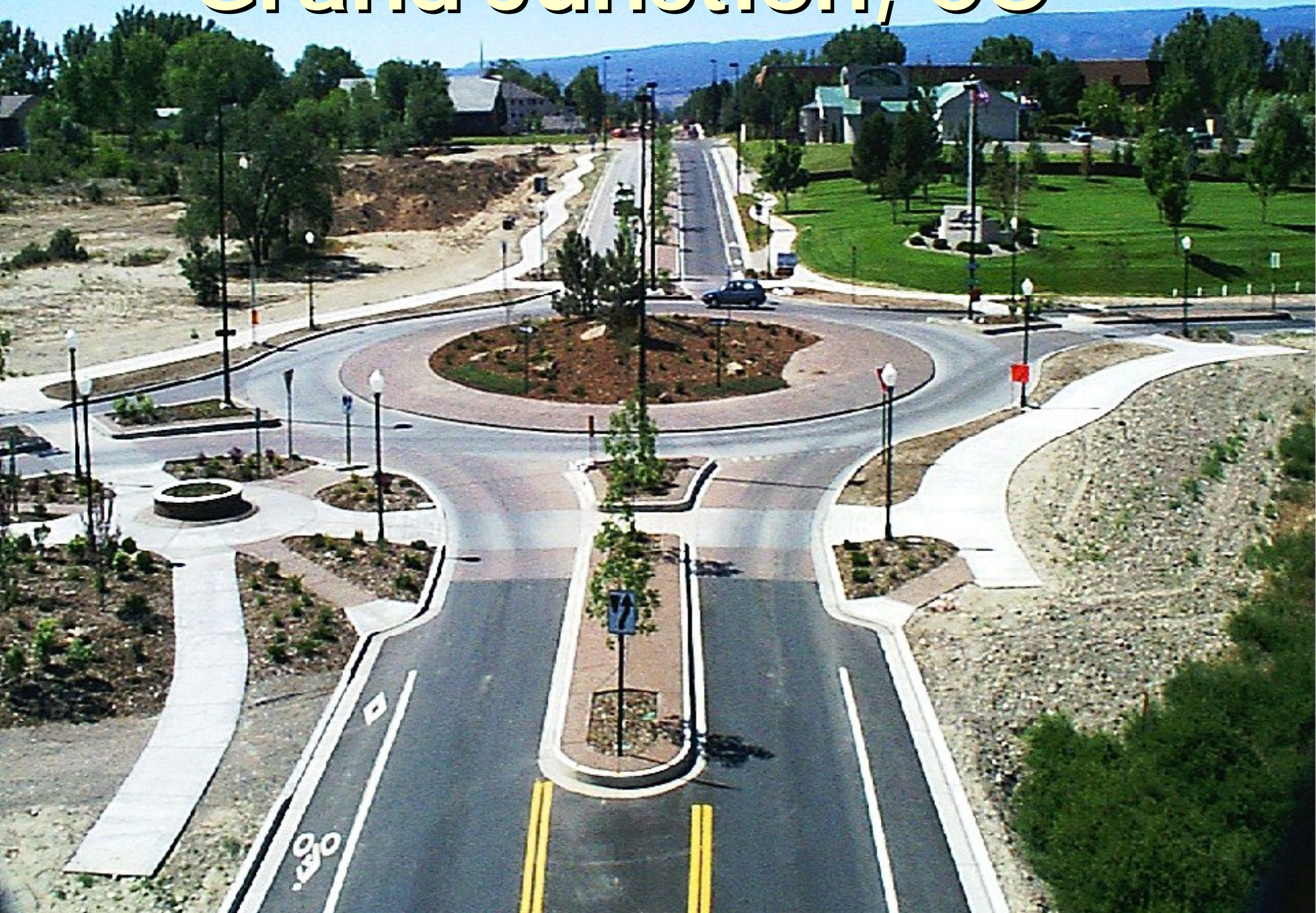








# Grand Junction, CO





# Before – Overland Park, Kansas



# After – Overland Park, Kansas





# Before – College St. Asheville NC



# After – College St. Asheville, NC





**Yes they do work in snow country !!**



# Alternative Concepts

- 2007 Base Traffic Information
- Signals
- Roundabouts



# **Alternative Concepts**

# Alternative Concepts

- Signal Concepts
  - Signals w/No Road Modifications
  - LAT Alternative
  - Signals with Road Modifications
  - 4-Leg Signalized Intersection
  - 5-Leg Signalized Intersection

# Alternative Concepts

- Roundabout Concepts
  - LAT Alternative
  - 4-Leg Roundabout
  - 5-Leg Roundabout

# Brainstorm Alternatives

- Other Ideas??
- Additional Concepts??
- Different Variations??

# Next Meeting & Assignment

## Working Group Meeting # 5

Thursday, July 19<sup>th</sup>, 2007

Pelham Police Training Room

## Assignments

1. Alternative Concepts Brainstorming
2. Communications Subcommittee
3. Review Roundabout Information